

## **WHAT IS CLAIMED IS:**

1. A compact currency evaluation device for identifying currency bills of different denomination comprising:

5 a housing having a depth dimension, a width dimension and a height dimension within which said device is enclosed;

10 said height dimension being not substantially more than about 4 times the smaller cross-sectional dimension of the smallest dimensioned bill to be identified by said device;

15 a discriminating unit for retrieving characteristic information from one or more bills;

20 a memory for storing master characteristic information associated with each genuine bill which the system is capable of identifying; and

25 signal processing means for comparing said retrieved characteristic information with master characteristic information associated with at least one genuine bill; said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information.

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2. The device of claim 1 wherein said depth dimension is not substantially more than about 5 times the smaller cross-sectional dimension of the smallest dimensioned bill to be identified by said device.

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3. The device of claim 1 wherein said width dimension is not substantially more than 2 times the larger cross-sectional dimension of the smallest bill to be identified by said device.

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4. The device of claim 2 wherein said width dimension is not substantially more than 2 times the larger cross-sectional dimension of the smallest bill to be identified by said device.

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5. The currency evaluation device of claim 1 wherein the discriminating unit scans less than the entire bill.

6. The currency evaluation device of claim 1 wherein said discriminating unit includes one or more scanheads for scanning one or more segments along bills, wherein the discriminating unit scans less than the entire bill and wherein the one or 5 more scanheads are positioned so that the characteristic information retrieved by scanning along the one or more segments is sufficient to identify the denomination of a bill.

7. The currency evaluation device of claim 1 wherein said discriminating 10 unit generates a scanned pattern, and wherein said memory stores master patterns associated with genuine bills, said master patterns corresponding to scanned patterns generated by said discriminating unit responsive to retrieved characteristic information from genuine bills.

15 8. The currency evaluation device of claim 1 wherein said signal processing means further includes means for comparing laterally displaced scanned patterns with laterally displaced master patterns associated with corresponding laterally displaced scans of at least one genuine bill, said signal processing means generating an indication of the identity of said bill based on said comparison when 20 said scanned patterns sufficiently match said master patterns.

25 9. The currency evaluation device of claim 1 wherein said discriminating unit initiates scanning a segment of said bill at a predetermined distance inboard of the leading edge of said bill, said scanned pattern being associated with the scanning of said segment; and

wherein said memory stores a third master pattern associated with the scanning of a segment of a genuine bill having a given denomination beginning at said predetermined distance inboard of the leading edge of the given denomination genuine bill and a fourth master pattern associated with the scanning of a segment of a 30 genuine bill having the given denomination beginning before said predetermined distance inboard of the leading edge of the given denomination genuine bill.

10. The currency evaluation device of claim 1 further comprising:

a transport mechanism for transporting bills, one at a time, along a transport path past said discriminating unit, said transport path being at least as wide as the widest type of bill that the system is designed to discriminate;

5 said discriminating unit retrieving characteristic information from a bill using a scanhead located near the center of said transport path;

said memory storing master characteristic information associated with laterally displaced scans for at least one genuine bill, said master characteristic information associated with laterally displaced scans assisting in compensating for lateral

10 displacement of said bill relative to the center of said transport path.

11. The currency evaluation device of claim 10 wherein said transport mechanism transports said bills at a rate in excess of about 1,000 bills per minute.

15 12. The currency evaluation device of claim 7 wherein said discriminating unit initiates scanning a segment of said bill at a predetermined distance inboard of a leading edge of said bill, said scanned pattern being associated with the scanning of said segment; and

wherein said memory stores a first master pattern associated with the scanning 20 of a segment of a genuine bill having a given denomination beginning at said predetermined distance inboard of the leading edge of the given denomination genuine bill and a second master pattern associated with the scanning of a segment of a genuine bill having the given denomination beginning before said predetermined distance inboard of the leading edge of the given denomination genuine bill.

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13. A compact currency evaluation device for identifying currency bills of different denomination comprising:

a housing having a depth dimension, a width dimension and a height dimension within which said device is enclosed;

30 said depth dimension being not substantially more than about 5 times the smaller cross-sectional dimension of the smallest dimensioned bill to be identified by said device;

10 said width dimension being not substantially more than about 2 times the larger cross-sectional dimension of the smallest dimensioned bill to be identified by said device;

5 a discriminating unit for retrieving characteristic information from one or more bills;

10 a memory for storing master characteristic information associated with each genuine bill which the system is capable of identifying; and

15 signal processing means for comparing said retrieved characteristic information with master characteristic information associated with at least one genuine bill; said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information.

14. A compact currency evaluation device for identifying currency bills of 15 different denomination comprising:

20 a housing having a depth dimension, a width dimension and a height dimension within which said device is enclosed;

25 said height dimension being not substantially more than about 10 inches;

30 a discriminating unit for retrieving characteristic information from one or more bills;

a memory for storing master characteristic information associated with each genuine bill which the system is capable of identifying; and

signal processing means for comparing said retrieved characteristic information with master characteristic information associated with at least one genuine bill, said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information.

15. The device of claim 14 wherein said depth dimension is not 30 substantially more than about 12½ inches.

16. The device of claim 14 wherein said width dimension is not substantially more than 10 inches.

17. The device of claim 16 wherein said width dimension is not substantially more than 10 inches.

18. A compact currency evaluation device for identifying currency bills of different denominations comprising:

a housing;

10 an input bin mounted to said housing;

an output bin mounted to said housing;

a transport path for transporting bills through said housing from said input bin to said output bin;

15 a first roller having one portion extending into said input bin and another portion extending into said transport path;

a second roller located along said transport path and spaced apart from said first roller along said transport path by a distance less than the narrow dimension of a bill; and

20 at least one stacker wheel having one portion extending into said transport path and another portion extending into said output bin, said stacker wheel being located along said transport path and spaced apart from said second roller along said transport path by a distance ~~no greater than~~<sup>less</sup> than the narrow dimension of a bill.

25 19. The currency evaluation device of claim 18 wherein the discriminating unit scans less than the entire bill.

20. 19. The currency evaluation device of claim 18 wherein said discriminating unit includes one or more scanheads for scanning one or more segments along bills, wherein the discriminating unit scans less than the entire bill and 30 wherein the one or more scanheads are positioned so that the characteristic information retrieved by scanning along the one or more segments is sufficient to identify the denomination of a bill.

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 21. The currency evaluation device of claim 18 wherein said  
 discriminating unit generates a scanned pattern, and wherein said memory stores  
 master patterns associated with genuine bills, said master patterns corresponding to  
 5 scanned patterns generated by said discriminating unit responsive to retrieve  
 characteristic information from genuine bills.

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 22. The currency evaluation device of claim 21 wherein said signal  
 processing means further includes means for comparing laterally displaced scanned  
 patterns with laterally displaced master patterns associated with corresponding  
 laterally displaced scans of at least one genuine bill, said signal processing means  
 generating an indication of the identity of said bill based on said comparison when  
 said scanned patterns sufficiently match said master patterns.

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 23. The currency evaluation device of claim 21 wherein said  
 discriminating unit initiates scanning a segment of said bill at a predetermined  
 distance inboard of the leading edge of said bill, said scanned pattern being associated  
 with the scanning of said segment; and  
 20 wherein said memory stores a third master pattern associated with the  
 scanning of a segment of a genuine bill having a given denomination beginning at  
 said predetermined distance inboard of the leading edge of the given denomination  
 genuine bill and a fourth master pattern associated with the scanning of a segment of a  
 genuine bill having the given denomination beginning before said predetermined  
 distance inboard of the leading edge of the given denomination genuine bill.

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 24. The currency evaluation device of claim 18 further comprising:  
 a transport mechanism for transporting bills, one at a time, along a transport  
 path past said discriminating unit, said transport path being at least as wide as the  
 widest type of bill that the system is designed to discriminate;  
 30 said discriminating unit retrieving characteristic information from a bill using  
 a scanhead located near the center of said transport path;

said memory storing master characteristic information associated with laterally displaced scans for at least one genuine bill, said master characteristic information associated with laterally displaced scans assisting in compensating for lateral displacement of said bill relative to the center of said transport path.

25. The currency evaluation device of claim 24 wherein said transport mechanism transports said bills at a rate in excess of about 1,000 bills per minute.

10 discriminating unit initiates scanning a segment of said bill at a predetermined distance inboard of the leading edge of said bill, said scanned pattern being associated with the scanning of said segment; and

wherein said memory stores a first master pattern associated with the scanning of a segment of a genuine bill having a given denomination beginning at said

15 predetermined distance inboard of the leading edge of the given denomination genuine bill and a second master pattern associated with the scanning of a segment of a genuine bill having the given denomination beginning before said predetermined distance inboard of the leading edge of the given denomination genuine bill.

20 27. A compact currency evaluation device for identifying currency bills of  
different denomination comprising:

a housing having a depth dimension, a width dimension and a height dimension;

a footprint of said device defined by the area obtained by multiplying said depth dimension by said width dimension being not substantially greater than about 125 square inches;

a discriminating unit in said housing for retrieving characteristic information from one or more bills;

a memory in said housing for storing master characteristic information

30 associated with each genuine bill which the system is capable of identifying; and

signal processing means in said housing for comparing said retrieved characteristic information with master characteristic information associated with at

least one genuine bill, said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information.

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28. The device of claim 27 wherein said depth dimension is not substantially greater than about 12½ inches.

29. The device of claim 27 wherein said width dimension is not substantially greater than about 10 inches.

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30. A compact currency evaluation device for identifying currency bills of different denomination comprising:

a housing having a depth dimension, a width dimension and a height dimension;

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the volume of said housing, defined by the product of said depth dimension and said height dimension and said width dimension being not substantially greater than about 1,250 cubic inches;

a discriminating unit in said housing for retrieving characteristic information from one or more bills;

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a memory for storing in said housing master characteristic information associated with each genuine bill which the system is capable of identifying; and

signal processing means in said housing for comparing said retrieved characteristic information with master characteristic information associated with at least one genuine bill, said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information.

31. The dimension of claim 30 wherein said depth dimension is not substantially greater than about 12½ inches.

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32. The device of claim 30 wherein said height dimension is not substantially greater than about 10 inches.

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33. The device of claim 30 wherein said width dimension is not substantially greater than about 10 inches.

5 34. A compact multiple currency identification system for identifying currency bills of different denominations of a plurality of currency systems comprising:

10 a discriminating unit for retrieving characteristic information from one or more bills;

15 a memory for storing master characteristic information associated with each genuine bill which the system is capable of identifying; said memory storing master characteristic information associated with at least one genuine bill from each of at least two currency systems; and

20 a signal processing means for comparing said retrieved characteristic information with master characteristic information associated with at least one genuine bill, said signal processing means generating an indication of the identity of said bill based on said comparison when said retrieved characteristic information sufficiently matches said master characteristic information, wherein said ~~evaluation~~ <sup>system</sup> device is relatively compact.

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35. The device of claim 34, and further including a currency system selection device for designating one or more of said at least two currency systems whereby said signal processor only compares said retrieved characteristic information with master characteristic information associated with genuine bills from said designated one or more currency systems.